



The effect of induced legal abortions on anxiety levels before and after the procedure

The effect of abortion on anxiety

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Abstract

Aim: The aim of this study was to investigate the effect of abortion procedure on psychological status of women. **Material and Method:** A total of 193 women seeking an elective abortion in legal 10 weeks gestational age interval were included in this prospective study. State-Trait Anxiety Inventory Scale (STAI) was performed twice; one is half an hour before the induced abortion and the other 10 days after the abortion. State anxiety (S-Anxiety) can be determined as discomfort, fear etc. Trait anxiety (T-anxiety) can be determined as a tendency to feel worried and discomfort. **Results:** S and T-Anxiety scores of cases showed statistical significant decrease after abortion ($p = 0.000$, $p = 0.037$ respectively). 65.3% of women had post-abortion T-anxiety scale score above 43 points (cut off for severe anxiety). Higher education levels are associated with lower pre and post-abortion T- Anxiety levels ($p=0.000$, $p=0.003$). Higher educated women were less likely to be at the risk of preabortion trait anxiety score above 43 points (OR 0.55, CI=0.5–1.14) and women with higher income were more likely to be at the risk of post-abortion State Anxiety Score above 43 point (OR 2.5, CI=0.94–0.42). **Discussion:** Anxiety scores are altered after induced legal abortions. Women who are admitted to gynecology clinics for an induced abortion should be monitored closely for psychological symptoms, and education about contraception should be given to all of the women in reproductive ages.

Keywords

Induced Abortion; Anxiety Disorders; Contraception; Family Planning

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Introduction

About 56 million abortions occur each year in the world and elective abortion ratio in Turkey is detected as 4.7 in 100 pregnancies [1, The Ministry of Health of Turkey Health Statistics year book. 2014]. In Turkey Family planning acts are widespread and women reach such serves easily [Hacettepe University Turkey Demographic and Health Survey (TDHS), 2013]. Until 1983, abortion in Turkey was permitted only to save the life or preserve the health of the pregnant woman and in cases of fetal impairment [Penal Code of 1 March 1936; Law No. 557 of 1 January 1965, and Ordinance of 12 June 1967]. Due to the increasing number of unsafe abortions at the beginning of 1980s and the related mortality and morbidity problems, the Government was prompted to make changes in the existing regulations, thus abortion became widely available, allowing abortion to be performed per the request of the pregnant woman up to the 10th week of pregnancy [The Population Planning Law. Law No. 2827 of 24 May 1983].

In Turnaway study, women experienced decreasing emotional intensity after abortion over time, and the 99% of women felt that termination was the right decision for them over three years [2]. On the contrary, higher rates of admissions to psychiatry clinic in the 12-months following abortion compared to the 12-months following birth reported in a study from Denmark [3].

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Understanding of the women’s knowledge about contraception is very important in the efforts to avoid unwanted pregnancies. The reasons for seeking an elective abortion are effected by economic and social factors of a nation in present period of time. Health policy makers must be aware of the women’s knowledge about contraception and the current reasons why a woman is directed to elective abortion. The aim of the present study was to investigate the effect of elective pregnancy termination procedure on anxiety levels of women in a short period of time.

Materials and Method

A prospective study was carried out at a tertiary care teaching hospital in Turkey. All women seeking an elective abortion in legal 10-week gestational age interval were invited to participate in the study. The women were informed about the Project and gave their consent to participate in an interview based on a questionnaire and STAI anxiety test. The study was approved by Zekai Tahir Burak Woman’s Health, Education and Research Hospital’s Institutional Review Board (No:68/2015) and informed consent was obtained from the participants. 309 women who applied to our family planning unit between 1 June and 31 August 2015 were asked to take part in this prospective study. 225 of them accepted to participate in the study. A questionnaire was applied to these volunteers. After the questionnaires were evaluated, 193 women aged 18-47 years were included in the study, and 32 women who had more than two unanswered questions were excluded. All included pregnancies were unwanted or unintended and the cases who had abortions for medical reasons were excluded. These women were

given a data form including a series of standard questions that were asked by an obstetrician and gynecologist who performed the abortion procedure. The questions dealt with demographic characteristics, contraceptive knowledge, abortion- seeking reasons. Records included the following information: age, education (primary- 5 years, secondary- 8 years, high school- 11 years, university), occupation, income, obstetric history (gestational age, gravida, parity, previous elective abortion, inter-pregnancy interval), contraceptive knowledge, the main reason for seeking induced abortion. The participants were divided into two income groups as < 1300 TL and ≥ 1300 TL based on hunger threshold which was a minimum amount of money necessary for basic food needs of a family of 4 members [Confederation of Turkish Trade Unions [Turk-Is] June 2015 Hunger threshold]. The Questionnaire about contraceptive knowledge was including the names of known family planning methods: modern methods; oral contraceptives, implants, injectable contraceptives, intrauterine device, condom, male sterilization, tubal ligation, lactational amenorrhea method (LAM), diaphragm, foam and traditional methods; calendar, withdrawal, vaginal douche. Women were also offered a list of specific reasons for having abortion which was classified into 3 groups. The first group includes women-focused reasons like risk to maternal health, unwilling to have any more children, advanced maternal age, wants to postpone childbearing, a new baby would interfere with future opportunities, newly married, not married. The second group includes other- focused reasons (need to focus on other children, relationship problem, risk to fetal health). The third group is material reasons (financial and housing limitations). State-Trait Anxiety Inventory Scale (STAI) was performed twice; one is half an hour before the induced abortion and the other 10 days after the abortion. STAI is a self-reported scale [4]. It can be applied to people over the age of 14. STAI is often used to measure the presence and severity of current symptoms of anxiety and a generalized propensity to be anxious. State anxiety (S-Anxiety) can be determined as discomfort, fear, and the autonomic nervous system symptoms induced by situations perceived as dangerous. Besides, Trait anxiety (T-Anxiety) can be determined as a tendency to feel worried, discomfort and under pressure [5]. The STAI includes 40 items, 20 items for the S-Anxiety and 20 items for the T-Anxiety subscales. Each subscale has a range of scores of 20-80, and the higher scores indicate greater anxiety. 36 points and below is accepted as no anxiety, 37- 42 points indicates mild anxiety, and 43 and higher scores indicate a severe anxiety. Especially 60 points and higher scores are accepted as a mark of a need for professional help. STAI Scale was used to assess anxiety status has been validated for Turkish population [6]. We also analysed the effect of variables on S and T-Anxiety scores.

Statistical analysis

Statistical analyses were evaluated using SPSS 17.0 for Windows (Chicago, IL). The mean and standard deviation (SD) were calculated for continuous variables. Independent samples t-test and paired-samples t-test were used to evaluate associations between continuous variables. The mean values of the three groups were analyzed using one-way ANOVA followed by Tukey post-hoc testing for multiple comparisons. Binary logistic re-

gression was used to determine the association of anxiety scores with age, employment, gravida, parity, education, income, contraceptive use while adjusting for covariates. Odds ratios (ORs) with 95% confidence intervals (CIs) were obtained for statistically significant outcomes. P-values were considered statistically significant at $p < 0.05$. Statistical analyses were cross-checked by a statistician.

Results

In our 3 month study period, The proportion of abortions to hospital parturitions was 7.6 %. This ratio was 5.6 % for elective abortions. A total of 225 women underwent induced abortion during the study period accepted to take part in this study and 193 women completed the questionnaire. The mean age of the women was 31.2 SD \pm 6.4 (min 18, max 47) years. Median gestational week was 7 (min 4, max10). Median gravida and parity were 3 (min 1,max 12), 2 (min 0-max 5) respectively. Interpregnancy interval was over 2 years in 55.4% of women. 46.8% had previous abortion and about 19.7% of them had at least one previous elective abortion. %20.2 of women didn't use any birth control method during implantation cycle and condom was the most commonly used method (37.3%) (Table 1). 95.3% of women knew at least one contraceptive method and 75,6% of them knew at least one modern method. Mean number of birth control methods the women knew about was 2.04 \pm 1.5. The most known method was condom (61%) (Table 2). The reasons for seeking abortion were depicted in Tab. 3. The most common reasons were need to focus on other children 39/193 (20.2%), risk to maternal health 36/193 (18.7%), financial reasons 35/193 (18.1%). Mean values of preabortion S and T-Anxiety scores of cases were 48 \pm 4,6 (min 20, max 77), 45 \pm 7,1 (min 20, max 69) and postabortion S and T-Anxiety scores of cases were 44 \pm 7,3 (min 20, max 73), 44 \pm 7,1 (min 20, max 59). S and T- Anxiety scores of cases showed statistical significant decrease after abortion, respectively ($p = 0.000$, $p=0.037$). Pre-abortion and post-abortion S-anxiety levels were not effected by the education level ($p>0.05$). T-Anxiety levels are found to be effected by education level. Higher education levels are associated with lower pre and post-abortion T-Anxiety levels ($p=0.000$, $p=0.003$). Lower monthly income is found to be associated with higher pre-abortion T-Anxiety levels ($p=0.011$) and higher income is found to be associated with higher postabortion S-Anxiety levels ($p=0.033$). Occupational status is found not to be associated with pre and post- abortion S and T-Anxiety levels in the whole groups (Table 4).

Grouping cases according to STAI scale scores showed that the vast majority of scores were higher than 43 points (severe anxiety cut off score) (Table 5). When we used Logistic Regression Models to adjust effect of age, employment, gravida, parity, education, income and contraceptive use during implantation cycle on anxiety levels of women, we found that higher educated women were less likely to be at the risk of preabortion trait anxiety score above 43 points (OR 0.55, CI=0.5–1.14) and women with higher income were more likely to be at the risk of post-abortion State Anxiety Score above 43 point (OR 2.5, CI= 0.94-0.42) (Table 6).

Tab. 1. Birth control method used during implantation cycle

Birth control method	N=193	Percent (%)
Condom	72	37.3
No contraception	39	20.2
Withdrawal	49	25.4
Intrauterine device	16	8.3
Oral contraceptive	12	6.2
Injectable contraceptive	4	2.1
Calendar	1	0.5

Tab. 2. The percentage of women familiar with different methods of contraception

Birth control method	Percent who knew the method (%)
Condom	61
Withdrawal	60
Intrauterine device	42
Oral contraceptive	10.9
Calendar	10.9
Breastfeeding	8.3
Vaginal douche	6.7
Injectable contraceptive	5
Sterilization	4.1
Implant	2.1
Emergency contraceptive	0.5
Diaphragm and foam	0

Tab. 3. Reasons for seeking abortion

Women focused reasons n(%)	Other focused reasons n(%)	Material reasons n(%)
Risk to maternal health 36/193 18.7	Need to focus on other children 39/193 20.2	Financial reasons 35/193 18.1
Wants no (more)children 30/193 15.5	Risk to fetal health 11/193 5.7	Housing limitations 2/193 1.1
Advanced maternal age 12/193 6.2	Relationship problem 7/193 3.6	
Wants to postpone childbearing 7/193 3.6		
A new baby would interfere with future opportunities 4/193 2.1		
Not married 6/193 3.1		
New married 4/193 2.1		

Discussion

Preservation of women's physical and psychological health is an important object in family and society health. Fertility control of women is an indirect indicator of their reproductive health. The Main goal within reproductive health is that women should have the ability to control their fertility by getting access to reproductive education, modern contraceptives, and safe abortions [World Health Organization, Department of Reproductive Health and Research. Safe Abortion: Technical and Policy Guidance for Health Systems. 2nd ed. Geneva: World Health Organization, 2012]. TDHS-2013 showed that 19% of whole gestations resulted in abortion and 5% of them were elective abortions. Family planning services are widely available and free of charge in Turkey. In our 3 month study period, the ratio of abortions to whole hos-

pital parturitions was 7.6% and this was 5.6% for elective abortions. Access to family planning services in need of abortion is an opportunity for healthcare professionals to educate women about suitable family planning methods. A study in South India found that 15.2% of the total elective abortion seekers had a history of elective abortion [7]. In our study 19.6% of the total abortion seekers had a history of elective abortion. We also found out that 20.2% of abortion seekers didn't use any contra-

ceptive method during implantation cycle. Only 5% of seekers were aware of emergency contraception. In one study, 96.1% of the participants knew about at least one modern method of birth control. The mean number of birth control methods the women knew about was 5.9%. The method best known by the women was Depo-Provera (89.5%), followed by condom (88.9%) and oral contraceptives (81.7%) [8].

TDHS-2013 showed that almost all of the Turkish women (99.8%) knew at least one modern family planning method and the number of methods they knew was 7.6. IUD and oral contraceptives are the most commonly known modern contraceptive methods in Turkey. However, in our study, the most known method was condom (61%) and 75.6% of the participants knew about at least one modern method of birth control. We also found out that the mean number of birth control methods known by women was 2. Formal sexual education is not a mandatory component of the high school curriculum in Turkey. By supplementing sexual knowledge of girls in school, we can invest the contraceptive awareness of women in reproductive ages. Health policy makers must be aware of the real reasons which lead women to elective abortion. Abortion rate can be reduced by giving emotional or financial support for the pregnancy or potential child. In one study, women reported need of postponing childbearing (25.9%) as their primary reasons for choosing an abortion [9, 10].

In our study women's reasons for seeking an abortion fell in to 12 broad themes. The predominant themes identified as reasons for seeking abortion were need to following: focus on other children (20%), risk to maternal health (18.7%) and financial reasons (18.1%). In a great review, reasons for abortion grouped in three categories, At first, 'women-focused' reasons, such as those related to timing, the woman's physical or mental health, or completed family size; second are 'Other-focused' reasons, such as those related to the intimate partner, the potential child, existing children, or the influences of other people, and the third are 'material' reasons, such as financial and housing limitations. Material reasons were the most frequently mentioned theme [11].

In our study we also encapsulated our reasons in three categories to show their relevance with anxiety levels. 'Women focused' reasons were the most frequently mentioned theme.

Pregnancy and the postpartum period is a time of many challenges for women physically and psychologically as well. Postpartum mental health has been a remarkable focus of previous studies but present literature does not contain enough data about pregnancy

Tab. 4. Anxiety levels according to education, income, occupation, reasons for seeking abortion.

Variables	Subgroup (n)	S-Anxiety Pre abortion (Mean±SD)	S-Anxiety Post abortion (Mean±SD)	T-Anxiety Pre abortion (Mean±SD)	T-Anxiety Post abortion (Mean±SD)
Education	Primary school 59/193	47.2 ±9.9	43.6 ±8.8	46.1±7.18	44.6±5.6
	Secondary school 33/193	50.7±9.1	47.2±10.5	47.6±6.8	46.48±5.1
	High school 78/193	49.8±9.3	44.1±11.2	44.8±6.1	43.8±8.2
	University 23/193	47.5±10.3	42.6±12.6	39.5±8.1	39.3±7.7
	P	0.2	0.3	0.000	0.003
Income (56 women refused to answer)	≤1300TL 48/137	48.4±8.9	42.5±9.4	47.6±6.5	44.4±4.9
	≥1300TL 89/137	51.3±9.4	46.5±10.7	44.5±6.8	43.6±8.1
	P	0.089	0.033	0.011	0.5
Employement	Yes 50/193	48± 9.2	44.4 ±11.5	45±7.0	43±7.6
	No 143/193	49.2±9.8	44.2±10.3	45±7.1	44.3±7.1
	P	0.6	0.8	0.9	0.3
Reasons for seeking abortion	Maternal reasons 81/193	48.3±9.4	44.4±10.7	44.3±7.2	43.6±7.4
	Other-focused reasons 74/193	50.2±9.4	45.2±10.3	45.9±7.4	44.5±7.4
	'Material' reasons 38/193	47±10.4	42±10.9	44.9±6.2	43.8±6.2
	P	0.1	0.2	0.4	0.7

Tab. 5. Grouping cases according to STAI scale scores

Variables	Score ≤36 (%)	Score 37-42 (%)	43 ≤ Score (%)
S-Anxiety Pre-abortion	9.8	13	77.2
S-Anxiety Post-Abortion	21.8	21.7	56.5
T-Anxiety Pre-Abortion	11.4	20.2	68.4
T-Anxiety Post-Abortion	12.4	22.3	65.3

Tab. 6. Outcomes of logistic regression method evaluating the risk of Postabortion S and T- Anxiety and Preabortion T- Anxiety.

Values (OR,95%CI)	Age	Employement	Gravida	Parity	Education	Income	Use of birth control method during implantation cycle
Preabortion Trait Anxiety score	0.9 (-0.02-0.37)	1.2 (0.21-0.23)	1.09 (0.08-0.25)	1.18 (0.17-0.36)	0.55 (-0.5-0.23)	0.6 (- 0.4-0.5)	0.7 (-0.3-0.5)
Postabortion State Anxiety Score	1.36 (0.31-0.21)	1.2 (0.21-0.23)	0.8 (-0.1-0.18)	1.43 (0.36-0.3)	0.76 (-0.2-0.2)	2.5 (0.9-0.4)	0.85 (-0.15-0.48)
Postabortion Trait Anxiety Score	0.98 (-0.01-0.03)	0.76 (-0.26-0.2)	0.96 (-0.03-0.2)	0.99 (-0.007-0.29)	0.89 (-0.11-0.19)	1.42 (0.3-0.4)	0.72 (-0.3-0.49)

loss. Regardless of the reason, type or timing, pregnancy loss may create great psychological stress for women. In this study, we focused on the pregnancy loss by elective abortions. Understanding the effect of induced abortion on mental health is important for clinical practice and policy. Today, conflicting data exists in the literature about abortion and as a consequence mental health problems. Long- term psychological effect of abortion on mental health status must be predicted for family wellbeing. Measuring Anxiety levels of electively aborted women can be helpful to identify the footsteps of mental health problems. So, understanding of the women's anxiety level, factors effecting her anxiety and current reasons why a woman is directed to elective abortion by health policy makers is very important in the efforts to give psychological, economic and social support to women whatever her decision about elective abortion.

Steinberg et al. reported by their research made on a nationally representative U.S. sample, that women who had abortions were more likely to have more mental health problems in post-pregnancy follow up than women in the childbirth group, and to have each type of psychiatric disorder or suicidal ideation at some point in the post- pregnancy follow up [12]. They found -as a result of 8 to 10 years follow up- that women who had an abortion had an increased risk of having post- pregnancy anxiety disorder, impulse-control disorder, substance use disorder, eating disorder, and suicidal ideation compared to women who gave birth. Giannandrea et al. reported that past- pregnancy loss -independent from the cause or type- is related with increased risk for subsequent postpartum psychiatric disorders [13].

Our study includes an early assessment of S and T-Anxiety levels in women who had an induced abortion and we found higher S and T-Anxiety levels before the abortion than both S and T-Anxiety levels in the tenth day of the abortion. Some large studies have found no serious adverse psychological effects 1–2 years after an induced abortion [12, 14]. Steinberg et al. stated in the aforementioned study that pre-pregnancy mental health was a strong predictor of post pregnancy mental health [12]. Our results showed that S and T anxiety levels of women decreased in the first control -tenth day- after the induced abortion. However, this is a short time to follow psychiatric outcomes. But at least we can say that some were relieved after the abortion procedure.

The decrease of S-anxiety levels regardless of the cause of abortion, may partially reflect an anxiety for the process things like operation, fear, blood or things related to the operating room. It would be better If we compared anxiety levels of abortion cases with other surgical procedure applied cases. Longer follow- ups may help to clarify the whole effect of the abortion on women's psychological state and anxiety. Although, there have been many articles address psychological effects of abortion [15–17]. Our study has novelty in that it compared S and T -Anxiety levels of pre and post- abortion and their association with covariates such as age, employment, gravida, parity, education, income, contraceptive use during implantation cycle. In our study T- anxiety in educated women has found to be less than the others. Lower monthly income has found to be related to higher pre-abortion trait anxiety and lower post-abortion

state anxiety levels. This shows that when poverty may cause an increase in long- term anxiety levels, in contrary it acts as a relieving factor for her conscience and may cause a decrease in state anxiety levels. We should say that education level and socioeconomic status stand out among the factors that influence the women in an abortion process. We also found that 65.3% of women who had postabortion T- anxiety scale score above 43 points [severe anxiety cut off] would probably need long- term professional psychological follow up. This rate is, even in the tenth day of the operation, considered a fairly high rate of anxiety for T-anxiety. But existing health care system does not have a mechanism to scan these women's need for psychological support by professionals. Herein, it may be beneficial to discuss the insufficiency of psychological support for all the women in these abortion processes. In many countries, as in Turkey, there is not a routine psychological/psychiatric counseling for women in the pre-abortion, abortion and postabortion processes.

Conclusion

Anxiety scores are altered after induced legal abortions. Women who are admitted to gynecology clinics for an induced abortion should be monitored closely for psychological symptoms, and education about contraception should be given to all of the women in reproductive ages.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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